

*On a new Form of Vesicular Worm with Exogenous Budding.*

By M. A. VILLOT.

The curious larva of a Tæniid, which I now propose to make known under the name of *Urocystis prolifera*\*, is, like the *Staphylocystes*†, a parasite of *Glomeris limbatus*; but it presents the peculiarity that it lives in the same host in various degrees of development—namely, in the vesicular state properly so called, free in the visceral cavity, and in the state of scolex, encysted in the adipose body.

*Urocystis prolifera*, in the vesicular state properly so called, presents for our consideration three very distinct parts—a head, a body, and a caudal vesicle. These three parts, which are in perfect continuity of tissue, are invaginated one within the other, the head in the body, and the body in the caudal vesicle.

The head is oval, more or less inflated laterally, truncate in front, and narrowed behind. It bears four sucking-disks and a very long rostellum. The latter deserves to be described in detail. It is invaginated in the head by its posterior extremity, and upon itself by its anterior extremity. From this it results that the head of the worm terminates by a sort of funnel of invagination, having perfectly the aspect of a frontal sucking-cup. The inner wall of this infundibulum presents numerous transverse folds, formed by the contraction of the elastic fibres of which it consists, and is armed with a circlet of hooks so small that it is impossible to count them. These hooks are packed very closely together; and to distinguish them it is necessary to employ a magnifying-power of 600–900 diameters; with lower powers we only see a chitinous ring of a brilliant yellow colour.

The body (*receptaculum capitis*) is united by the neck to the posterior part of the head. It is formed by a very delicate membrane, so closely pressed against the inner wall of the caudal vesicle that it is difficult to distinguish it therefrom. We only remark beneath the neck a sort of pad, formed of embryonic cells, like the parenchyma of the head. The peduncle which unites the body to the caudal vesicle can only be detected with difficulty, in consequence of the transparency and contractility of the tissues and the narrowness of the orifice of invagination.

The caudal vesicle is oval, slightly acuminate in front, obtuse posteriorly. It is formed, as usual, of anatomical elements of two kinds—an outer layer of interlaced elastic fibres, and an inner layer of connective tissue. Its contractility, which is very marked, enables the animal to move in all directions. The scolex occupies only two thirds of its cavity; and there is in the posterior region a very considerable vacancy.

The dimensions of the different parts of the worm are as follows:—hooks 0·001 millim.; diameter of the trunk in the invaginated state 0·03; diameter of the sucking-disks 0·02; length of the scolex in the invaginated state 0·07; length of the caudal vesicle 0·09; breadth

\* Incorrectly called *Urocystis prolifer* by M. Villot.

† See 'Annals,' ser. 5, vol. i. p. 258.

of the caudal vesicle 0.06. From these measurements one may judge of the minuteness of our parasite, and the difficulties presented by its study. Its bulk does not exceed that of an Infusorian; and it is evident that it would escape the researches of any observer who does not avail himself of the lens and the microscope.

As indicated by its name, *Urocystis prolifera* is essentially characterized by its mode of multiplication. Its buds are successively developed, and become detached as soon as they have arrived at maturity. Thus its colonies are usually composed only of two individuals placed one behind the other—a completely-developed vesicle in front, and a bud in the form of a caudal appendage. The bud is represented at first only by a small spherical vesicle containing cellular elements in course of proliferation. It is sessile, and in continuity of tissue by its anterior extremity with the individual that preceded it (perfect vesicle or bud); but during development it acquires an oval form, and tends gradually to become isolated. At the moment when the first traces of the scolex make their appearance the two individuals are no longer united to each other except by a thin cord. When it becomes detached, the vesicular bud has acquired its full development, and contains a perfectly-formed scolex. The latter speedily frees itself from its caudal vesicle to go and encyst itself in the adipose body of its host; but the scolex, while abandoning its caudal vesicle, remains encysted in its *receptaculum capitis* and does not evaginate its trunk. The escape of the scolex may be effected either by degenerescence of the caudal vesicle or by rupture of the pedicle which attaches the scolex to the vesicle. The latter mode, which I have frequently observed, appears to me the more natural.

The scolex, in becoming encysted in the adipose body of its host, does not undergo any great modification. There is nothing more than a change of external form and a thickening of the integuments. It becomes spherical; and the embryonic elements which constitute the wall of the *receptaculum capitis* pass to the state of elastic fibres, to replace the caudal vesicle as a protective organ.

No doubt, independently of its habitat, *Urocystis prolifera* has many relations to *Staphylocystis*; but it differs from the latter by important characters which fully justify the establishment of a genus. In *Staphylocystis* the individuals which constitute the colony are developed simultaneously, and do not separate from each other at maturity. The scolex does not issue from the caudal vesicle, and has not its trunk invaginated upon itself.

The other states of this new form of worm are unknown to me, and probably have not yet been described; but we know now that the scolex which must figure at the head of the strobile possesses a long trunk and a simple circle of very small hooks. As to the definitive host, whether mammal or bird, it certainly belongs to the Alpine fauna. The *Glomeris* which furnished me with *Urocystis prolifera* was captured in the woods of the Grande-Chartreuse.—*Comptes Rendus*, December 6, 1880, p. 938.